EVS30 Symposium
Stuttgart, Germany, October 9 - 11, 2017

Urban – Mobile – Pioneering: The City of Offenbach and its Electric Mobility Service

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Abstract

In the last eight years, the city of Offenbach, together with companies of the mobility business field of the Offenbach public utilities, have submitted a multifaceted electrically mobile concept. This lecture should provide an overview of the projects completed in recent years. In 2009, the Federal Ministry of Transport launched the "Electrical Mobility Model Regions in Germany" aimed at supporting alternative technologies, especially e-mobility, by actively promoting it. Since then, numerous practical projects have been carried out in Hessen under the leadership of the regional project management office of the Rhine-Main model region. The project management office is housed in the Offenbach public utilities corporate group. Many different projects are involved in finding a way to integrate electrical vehicles meaningfully into existing mobility concepts. In Offenbach, the spectrum of the product range goes from the integration of electrical mobility into existing mobility chains for local public transportation all the way to electrically-based fleet solutions for companies. On the one hand, this means that with the help of electrically-powered vehicles, mobility in metropolitan areas like the Rhine-Main region should be sustainably secured. The mobility business field strives to have local public transportation become even more electrically mobile by using e-buses in perspective. In addition, the Offenbach user can nowadays already combine in a mobility mix public transportation with pedelec and electrically mobile car sharing services.

On the other hand, Offenbach has succeeded in making companies enthusiastic followers of e-mobile vehicle technology and put 40 electrical cars on the streets. The project central office regards itself as think tank and initiator for implementing various e-mobility projects in the city of Offenbach and beyond. From here, numerous regional projects that test future mobility for their everyday usefulness and make them viable for the market are coordinated. The main emphasis of the Rhine-Main Regional Model Region project is the integration of e-mobility into existing mobility chains for passenger and commercial transport. The current ongoing projects in the Rhine-Main Region amount to a total sum of 31 million euros, of which over 17 million euros come from the Federal Ministry of Transport and Digital Infrastructure. The NOW Co. (Nationale Organisation Wasserstoff- und Brennstoffzellentechnologie GmbH) is in charge of supraregional coordination. In addition, the mobility business area of the public utilities group is collaborating closely with the "Electricity Moves" initiative of the state of Hessen.

Efforts are being made to see how electric vehicles can be meaningfully integrated into current mobility and traffic concepts. Everyday usefulness, user friendliness and flexibility of the offered services are always the center of attention.

Keywords: Car-Sharing, Sustainability, electric vehicle, Municipal government, public transport

1 E-Bus project has been tested

With 70 buses in nine bus lines, the mobility business field serves its customers in Offenbach, supplementing regional public transportation with it. With its E-Bus project, the city of Offenbach is once again one of the pioneers in the area of passenger transportation. In 2011, Offenbach‘s traffic operations were the first in Germany to actively search for sustainable solutions in the use of electric buses in their fleet. For the comprehensive approach, aspects such as internal processes or practical applications were analyzed in addition to automotive engineering and technical infrastructure. In 2016, the companies of the mobility business field started a second trial period. In the short and smooth test performed with the scheduled service, about 460 km were traveled and approx. 490 kg CO2 saved in the process. In 2017, more tests with other providers will be performed. Then, in the first implementation step, overnight charging in the depot will be tested first. Looking forward, fast-charging points should be set up in selected last stops as the electric bus fleet expands. Through the stepwise replacement of the diesel fleet, it is therefore possible to reduce mid- and long-term environmental impact in a lasting way.

Goals & Findings:

- reorganization of bus-fleet in public transportation sector to e-busses
- 30% share of electric vehicles in own bus fleet
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- gradual reorganization of whole bus fleet through replacement purchases
- construction of charging infrastructure within the depot and on route including changes and adjustments in management, garage/depot and controlling

➔ Through the use of e-busses in Offenbach up to 2, 4 % of GHG of street-bound traffic could be saved

2 Electrical supplementation of the mobility mix

The e-mobile station in the market square was funded by the Federal Ministry of Transport. Built in 2011 as the first of its kind, it is part of the activities of the Rhine-Main e-mobility model region. The stated goal of the stakeholders RMV Rhine-Main integrated transportation system and the public utilities group companies of the mobility business field was to create a user-friendly electrically mobile service to supplement the range offered by local public transportation. To achieve this, a rental system with two electrical cars and 15 pedelecs was developed. The station was set up with access to the suburban train station and the inner city bus lines. After the success of the market square e-mobile station with over 500 users, the existing system will be expanded by five additional e-mobile stations distributed throughout Offenbach’s urban area. Through this network, customers can also resort to the e-mobile services as one-way option too. In this way, the already existing sharing service is designed in a user-friendly way and can be better integrated into everyday mobility. Moreover, one charging point each of the e-mobile station should be made available to private users of electric cars. The e-mobile project should in this way become an integral part of an intermodal mobility service, additionally strengthened through the integration into the RMV information system.

Goals:

- Development of an integrated offer for urban mobility in Offenbach
- Installation and development of a comprehensive, site-flexible rental system for electric vehicles and pedelecs, a total of 5 stations in Offenbach
- Sharing eMobil-Hubs as charging points with private e-vehicle users
- Connection to “eTicket RheinMain” by RMV

3 The eMiO project - e-mobility in Offenbach

The public utility group can also show it has experience in developing an e-fleet system that is part of the “eMiO – electrical mobility in Offenbach” project. With funding support from the Federal Ministry of Transport, the public utility group offered an extensive “all-round carefree package” for a three-year period with attractive conditions for local companies. Many middle-sized companies, freelancers or social associations have taken advantage of this option to start using the new vehicle technology. After two years of operation, 40 vehicles have been marketed and are on Offenbach’s streets. Customers have travelled 640,000 km by now in an electrically mobile way. The charging infrastructure was expanded parallel to the development of the eMiO vehicle fleet.

Goals & Findings:

- Use of 40 vehicles in Offenbach
- Multiplication of subject matter through companies in Offenbach
- Increased visibility of electric vehicles in Offenbach
- Decrease of emission / nitrogen oxide
- Traffic noise reduction
- Supporting the city of Offenbach in reaching their target in environmental and climate protection
- Increase of know-how in the field of electro-mobility for certain departments within the corporate group, i.e. garage and insurance
- Dependability and reliability of deployed vehicles with a rate of more than 90 %
- Hardly any failures of vehicles due to technical problems but due to repair work after rear-end collisions
- Increased consumer acceptance generated by educational advertising, i.e. presentations

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